

WE CLAIM:

1. A mechanical mock-up used for training, the mock-up having a plurality of discrete probe points that may be respectively contacted by a probe of a diagnostic tool used in the training, the mechanical mock-up comprising:

a respective electronically readable memory in electrical connection with each probe point, the electronically readable memory storing a unique identifier code that can be read by the diagnostic tool when the probe contacts the probe point.
2. The mechanical mock-up as claimed in claim 1 wherein each electronically readable memory comprises a computer chip encased in a sealed container.
3. The mechanical mock-up as claimed in claim 1 wherein the mechanical mock-up simulates electrical control panels of a machine.
4. A system for providing operation, diagnostic, procedure or maintenance training, comprising:

a mechanical mock-up of at least a part of a system on which the training is required, the mechanical mock-up having a plurality of probe points which are respectively connected to electronically readable memories that respectively store a unique identifier code;

a host computer comprising means for communicating with a system/machine simulation, and means for associating each unique identifier code with a

corresponding probe event, passing a probe point event to the system/machine simulation, and determining a response of the system/machine simulation to the probe event; and

simulated diagnostic equipment having at least one probe that can be maneuvered to contact any one of the probe points, means for reading the unique identifier code when one of the probe points is contacted by the probe, means for communicating with the host computer in order to pass each unique identifier code to the host computer and to receive feedback from the host computer, and means for processing the feedback to determine a display value to be displayed.

5. The system as claimed in claim 1 wherein each of the electronically readable memories respectively comprise a microelectronic circuit that is activated to output the unique identifier code when the probe contacts a probe point to which the microelectronic circuit is connected.
6. The system as claimed in claim 5 wherein the probe activates the microelectronic circuit when it contacts the probe point by supplying an electrical current through the connection to the microelectronic circuit.
7. The system as claimed in claim 6 wherein the electronically readable memory comprises a touch memory button.

8. The system as claimed in claim 1 wherein the simulated diagnostic tool comprises an electronic multimeter having two probes.
9. The system as claimed in claim 8 wherein the simulated diagnostic tool comprises a simulated digital multimeter, with a mode selector input, and a communications processor for communicating with the host computer.
10. The system as claimed in claim 9 wherein the host computer is adapted to use the mode selection input to determine a set of simulation parameters maintained by the simulation that are to be associated with the display value.
11. The system as claimed in claim 10 further comprising an instructor station that may be used to control the simulation to simulate system faults.
12. The system as claimed in claim 11 wherein the instructor station further permits an instructor to monitor a training exercise, guide a trainee through a training exercise, create a simulation program, and to select preprogrammed system faults.
13. The system as claimed in claim 12 further comprising an electronic memory in communications with the host computer for storing student responses to training exercises.
14. The system as claimed in claim 12 wherein the host computer further comprises a look-up table for associating the unique identifier code with a probe

point of the simulated probed equipment to identify a probe point event, and a procedure for communicating the probe point event to the simulation server.

15. A simulated diagnostic tool for operation, diagnostic, procedure or training for a system or machine using a simulation and a mechanical mock-up of at least a part of the system or machine, the simulated diagnostic tool comprising:

a probe for supplying an electrical current to an electronically readable memory that is in electrical connection with an electrically conductive probe point of the mechanical mock-up when the probe contacts the probe point;

a communications processor communicatively coupled to the simulation, for relaying to the simulation a unique identifier code retrieved by the probe from the electronically readable memory, and for receiving display change data from the simulation; and

a display for displaying a value determined using the display change data.

16. The simulated diagnostic tool as claimed in claim 15 wherein the simulated diagnostic tool is a multimeter that further comprises a user input for selecting a mode, and the mode selection is used to determine the value displayed.

17. The simulated diagnostic tool as claimed in claim 16 wherein the simulated diagnostic tool comprises two probes, and the communication processor relays to the

simulation the unique identifier codes retrieved by each of the two probes.

18. The simulated diagnostic tool as claimed in claim 17 wherein the simulated diagnostic tool further comprises an electronically readable memory electrically coupled to at least one of the two probes to permit the simulation to detect when the two probes are in contact with each other.
19. An article comprising:
 - a computer readable modulated electrical signal emitted from an electronically readable memory connected to a mechanical mock-up of a system or a machine upon electrical contact with a probe of a simulated diagnostic tool; and
 - a unique identifier code embedded in the signal for permitting a training system to determine a probe event that indicates electrical contact between the probe and a probe point on the mechanical mock-up.
20. A method of constructing a training system for at least one of diagnostic, procedure and maintenance training for a system or a machine, comprising:
 - constructing a mechanical mock-up of at least a part of the system or the machine, the mechanical mock-up comprising probe points in respective electrical connection with corresponding electronically readable memories that store unique identifier codes; and

constructing a simulated diagnostic tool having a probe that may be manipulated to contact one of the probe points, the diagnostic tool being adapted to read the unique identifier code stored by the electronically readable memory when the probe is manipulated to contact the probe point, and to use the unique identifier code to send a probe event to a computer simulation of the system or machine.